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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Detlev Wittmer

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BACON & THOMAS, PLLC

625 SLATERS LANE

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EXAMINER

OBERLY, ERIC T

ART UNIT

PAPER NUMBER

2184

MAIL DATE

DELIVERY MODE

12/10/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/572,934	WITTMER, DETLEV	
	Examiner	Art Unit	
	ERIC T. OBERLY	2184	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7, 8 and 10-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7, 8, and 10-19 is/are rejected.
- 7) ☒ Claim(s) 17 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/28/2010 has been entered.

Claim Objections

Claims 17-18 is objected to because of the following informalities:

As to claim 17, on line 15 of the claim, correct "the" to -a- in order to provide proper antecedent basis for the limitation "portable storage medium".

Claim 18 is objected to because of dependence on claim 17.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 8, 10, and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

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which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As to claim 8, the "proprietary protocol" claimed is not disclosed in the specification. As "proprietary" indicates an exclusive ownership of the rights to the protocol, failure to disclose the actual proprietary protocol or the rightful owner fails to comply with the written description requirement because the disclosure does not provide one skilled in the relevant art with the ability to determine the existence of the claimed subject matter.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8, 10, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 8, 10, and 18 are indefinite because the term "proprietary" fails to clearly define the protocol. The "proprietary protocol" is neither defined in the claim nor the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 11, 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination Ketler et al. (US Patent # 6611208), hereinafter referred to as Ketler, in view Behrens et al. (US Patent # 6037857), hereinafter referred to as Behrens, in view of Mancini et al. (US Patent # 6583982), hereinafter referred to as Mancini, in view of Vazach et al. (US Patent 7236342), hereinafter referred to as Vazach.

Referring to claim 7, Ketler discloses a method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1.); transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further to a calibration unit (Rem-Cal module 509, fig. 5, col. 7, lines 10-20), wherein a calibration of the sensor is possible with the help of the calibration unit (Rem-Cal circuitry generates a new, calibrated 4-20 mA analog signal, faithful to the uncalibrated, linear sensor output signal; col. 8, lines 25-35); transferring the measurement data to the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10).

While Ketler discloses analog measurements and transferring the measurement data through an intrinsic safety barrier transfer path, Ketler does not appear to explicitly

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disclose converting analog measured values into digital measurement data or the intrinsic safety barrier is a galvanically decoupled transfer path. Furthermore, Ketler does not appear to explicitly disclose saving the measurement data to a portable storage medium which is separable from the calibration unit, transporting the storage medium in a separated state to the computer unit; connecting the storage medium with the computer unit via an interface that serves as an Explosion-barrier providing a galvanic separation, which occurs either optically or inductively.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30). Furthermore, Mancini discloses saving the measurement data (data collected) to a portable storage medium (core computer) which is separable (col. 3, lines 46-50), transporting the storage medium in a separated state to the computer unit (col. 3, lines 34-35), connecting the storage medium with the computer unit via an interface (col. 3, lines 35-36).

While the combination of Ketler, Behrens and Mancini discloses a combination of galvanic isolation and separable storage, the combination does not appear to explicitly disclose the separable interface serves as an Explosion barrier providing galvanic separation, which occurs either optically or inductively.

However, Vazach discloses a separable interface serves as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set

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receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous

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area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to provide a removable storage medium such as the core computer of Mancini so that data collected within the hazardous area maybe safely removed for use in a non hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

As to claim 11, Ketler discloses method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1); and transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further to the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10).

While Ketler discloses analog measurements and transferring the measurement data through an intrinsic safety barrier transfer path, Ketler does not appear to explicitly disclose converting analog measured values into digital measurement data or the intrinsic safety barrier is a galvanically decoupled transfer path. Furthermore, Ketler

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does not appear to explicitly disclose a plug-in module comprising an Explosion-barrier, providing a galvanic separation, which occurs either optically, capacitively or inductively.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30). Furthermore, Mancini discloses a plug-in module of a computer unit (core computer; col. 3, lines 46-50).

While the combination of Ketler, Behrens and Mancini discloses a combination of galvanic isolation and a plug-in module, the combination does not appear to explicitly disclose the separable interface serves as an Explosion barrier providing galvanic separation, which occurs either optically, capacitively or inductively.

However, Vazach discloses a separable interface serves as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides an obvious variant of the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to provide a removable storage medium such as the core computer of Mancini so that data collected within the hazardous area may be safely removed for use in a non hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

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Referring to claim 13, Ketler discloses a method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, col. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1.); transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further transferring the measurement data to the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10); wherein: in the computer unit different sensors and measuring points are managed (col. 2, lines 45-50).

While Ketler discloses analog measurements, transferring the measurement data through an intrinsic safety barrier transfer path, and the remote computer records and analyzes relevant parameters, “sensor history” (Ketler: col. 1, lines 35-40), Ketler does not appear to explicitly disclose converting analog measured values into digital measurement data, the intrinsic safety barrier is a galvanically decoupled transfer path, or a graphic display of the parameters. Furthermore, Ketler does not appear to explicitly disclose a plug-in module providing a galvanic separation, which occurs either optically, capacitively or inductively.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known

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analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30). Furthermore, Mancini discloses a plug-in module of a computer unit (core computer; col. 3, lines 46-50) and graphic illustration of data (NOTE: the graphic illustration is inherent to the anticipated access of data through the user desktop or laptop as a graphic user interface would be required; col. 3, lines 35-40).

While the combination of Ketler, Behrens and Mancini discloses a combination of galvanic isolation and a plug-in module, the combination does not appear to explicitly disclose the separable interface serves as an Explosion barrier providing galvanic separation, which occurs either optically, capacitively or inductively.

However, Vazach discloses a separable interface serves as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides an obvious variant of the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to provide a removable storage medium such as the core computer of Mancini so that data collected within the hazardous area may be safely removed for use in a non-hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

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Referring to claim 14, Ketler discloses a method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1.); transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further to a calibration unit (Rem-Cal module 509, fig. 5, col. 7, lines 10-20), wherein a calibration of the sensor is possible with the help of the calibration unit (Rem-Cal circuitry generates a new, calibrated 4-20 mA analog signal, faithful to the uncalibrated, linear sensor output signal; col. 8, lines 25-35); transferring the calibration data to the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10) via a standard interface at the computer (data phone line connect 204, fig. 2).

While Ketler discloses analog measurements and transferring the measurement data through an intrinsic safety barrier transfer path, Ketler does not appear to explicitly disclose converting analog measured values into digital measurement data or the intrinsic safety barrier is a galvanically decoupled transfer path. Furthermore, Ketler does not appear to explicitly disclose saving the calibration data to a portable storage medium which is separable from the calibration unit, transporting the storage medium in a separated state to the computer unit; connecting the storage medium with the

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computer unit via an interface that serves as an Explosion-barrier providing a galvanic separation, which occurs either optically, capacitively or inductively.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30). Furthermore, Mancini discloses saving the measurement data (data collected) to a portable storage medium (core computer) which is separable (col. 3, lines 46-50), transporting the storage medium in a separated state to the computer unit (col. 3, lines 34-35), connecting the storage medium with the computer unit via an interface (col. 3, lines 35-36).

While the combination of Ketler, Behrens and Mancini discloses a combination of galvanic isolation and separable storage, the combination does not appear to explicitly disclose the separable interface serves as an Explosion barrier providing galvanic separation, which occurs either optically or inductively.

However, Vazach discloses a separable interface serves as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically, capacitively or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a

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direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to provide a removable storage medium such as the core computer of Mancini so that data collected within the hazardous area maybe safely removed for use in a non hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

As to claim 15, the combination of Ketler, Behrens, Mancini, and Vazach discloses the computer unit provides a history of the sensor using the calibration data (Ketler: relevant parameters are recorded and analyzed by computer; col. 1, lines 35-40) transferred from the portable storage medium (Mancini: user desktop or laptop provides access to collected data; col. 3, lines 35-40).

As to claim 16, while Ketler discloses the measurement data is transferred to the computer unit via a standard interface (data phone line connect 204, fig. 2) provided at the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10), the combination of Ketler, Behrens, and Mancini does not appear to explicitly disclose connection to the interface that serves as an Explosion-barrier.

However, Vazach discloses the connection interface serves as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a

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direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to provide a removable storage medium such as the core computer of Mancini so that data collected within the hazardous area maybe safely removed for use in a non hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

Referring to claim 17, Ketler discloses a method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1.); transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further to a calibration unit (Rem-Cal module 509, fig. 5, col. 7, lines 10-20), calibrating the sensor with the help of the calibration unit (Rem-Cal circuitry generates a new, calibrated 4-20 mA analog signal, faithful to the uncalibrated, linear sensor output signal; col. 8, lines 25-35); transferring the calibration data from the calibration unit to an interface (DX4404B card is proprietary multipurpose field input-output cards, col. 6, lines 40-50,...the calibrated sensor signals from the Rem Cal modules are passed onto the DX4404B cards, col. 9, lines 30-31), transferring the calibration data from the interface to the computer unit via a standard interface (data phone line connect 204, fig. 2) provided at the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10), wherein: the

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computer unit provides a history of the sensor using the calibration data (remote computer records and analyzes relevant parameters; col. 1, lines 35-40).

While Ketler discloses analog measurements and transferring the measurement data through an intrinsic safety barrier transfer path, Ketler does not appear to explicitly disclose converting analog measured values into digital measurement data, the intrinsic safety barrier is a galvanically decoupled transfer path, the interface is embodied as an Explosion-barrier providing a galvanic separation, which occurs either optically, capacitively or inductively, or data transferred from a portable storage medium.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30). Furthermore, Mancini discloses data (data collected) transferred from a portable storage medium (core computer; col. 3, lines 34-50).

While the combination of Ketler, Behrens and Mancini discloses a combination of galvanic isolation and a plug-in module, the combination does not appear to explicitly disclose the separable interface serves as an Explosion barrier providing galvanic separation, which occurs either optically, capacitively or inductively.

However, Vazach discloses a separable interface embodied as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe

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network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the seperable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to provide a removable storage medium such as the core computer

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of Mancini so that data collected within the hazardous area maybe safely removed for use in a non hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination Ketler in view Behrens in view of Vazach, in view of Barros De Almeida et al. (US Patent # 6839790), hereinafter referred to as Barros De Almeida.

As to claim 8, Ketler discloses method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1,); transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further to a calibration unit (Rem-Cal module 509, fig. 5, col. 7, lines 10-20), wherein a calibration of the sensor is possible with the help of the calibration unit (Rem-Cal circuitry generates a new, calibrated 4-20 mA analog signal, faithful to the uncalibrated, linear sensor output signal; col. 8, lines 25-35); transfer the measurement data from the calibration unit to an interface (DX4404B card is proprietary multipurpose field input-output cards, col. 6, lines

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40-50,...the calibrated sensor signals from the Rem Cal modules are passed onto the DX4404B cards, col. 9, lines 30-31), transferring the measurement data from the interface to the computer unit via a standard interface (data phone line connect 204, fig. 2) provided at the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10); and data transfer between the sensor and the calibration unit occurs with a proprietary protocol (NOTE: the protocol the proprietary Rem-Cal card uses; col. 6, lines 40-41).

While Ketler discloses analog measurements and transferring the measurement data through an intrinsic safety barrier transfer path, Ketler does not appear to explicitly disclose converting analog measured values into digital measurement data or the intrinsic safety barrier is a galvanically decoupled transfer path. Furthermore, Ketler does not appear to explicitly disclose the interface embodied as an Explosion-barrier providing a galvanic separation, which occurs either optically, capacitively or inductively; and the standard interface at the computer unit is a USB-interface;

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30), Vazach discloses an interface embodied as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10)

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providing galvanic separation, which occurs either optically, capacitively or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30), and Barros De Almeida teaches the standard interface at the computer unit is a USB-interface (a host having a Universal Serial Bus (USB) port; col. 4, line 9).

Ketler, Behrens, Vazach and Barros De Almeida are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Vazach and Barros De Almeida before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the barrier interface of Vazach, and the USB interface of Barros De Almeida because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the barrier interface would provide isolated connection between intrinsically and non-intrinsically safe systems, and the USB interface would provide an obvious variant to anticipated communication interfaces providing further plug and play advantages.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art

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would be motivated to incorporate well known intrinsically safe circuitry, barriers, and industry standard interfaces to provide safe and high speed data collection within the hazardous area for use in a non hazardous area (Behrens col. 2, lines 45-50; Vazach col. 3, lines 1-10;).

Therefore, it would have been obvious to combine Ketler, Behrens, Vazach and Barros De Almeida to obtain the invention as specified in the instant claim.

As to claim 10, while Ketler discloses data transfer between the sensor and calibration unit, the combination of Ketler, Behrens, and Vazach does not appear to explicitly disclose data transfer in accordance with the RS485 standard.

However, Barros De Almeida discloses data transfer in accordance with the RS485 standard (col. 5, lines 44-46).

Ketler, Behrens, Vazach and Barros De Almeida are analogous art because they are from the same field of intrinsically safe data collection.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Vazach and Barros De Almeida before him or her, to transmit signals between field components in accordance with RS485 as taught by Barros De Almeida because the RS485 is an industry standard.

Ketler anticipates communication with sensors within the hazardous area, and Behrens anticipates an intrinsically safe serial communication employing a high data rate suitable for the control of many control points within a hazardous area (see Behrens; col. 9, lines 50-55); a person having ordinary skill in the art would be

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motivated use a protocol in accordance with RS485 as taught by Barros De Almeida as RS485 is a well known serial communication standard which offers high data transmission speeds.

Therefore, it would have been obvious to combine Ketler, Behrens, Vazach and Barros De Almeida to obtain the invention as specified in the instant claim.

Claims 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ketler, Behrens, Mancini, and Vazach as applied to claims 11 and 17 above, and further in view of Barros De Almeida.

As to claim 12, while the combination of Ketler, Behrens, Mancini, and Vazach discloses a plug-in module, the combination does not appear to explicitly disclose the interface of the plug-in module conforming to a PCMCIA plug-in card.

However, Barros De Almeida teaches a PCMCIA interface connection (col. 1, lines 65-67).

Ketler, Behrens, Mancini, Vazach and Barros De Almeida are analogous art because they are from the same field of intrinsically safe data collection.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, Vazach and Barros De Almeida before him or her, implement the plug-in core computer as taught by the combination of Ketler, Behrens, Mancini, and Vazach as a PCMCIA connection as taught by Barros De Almeida as background in the field of the art.

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Mancini discusses the concept of transferable computer cores as a module containing some essential components of a computer, but lacking any usable interface (see Mancini; col. 1, lines 50-56); as PCMCIA cards, also commonly known as PC Cards, are widely used in the computer industry since their creation in 1991, a person having ordinary skill in the art would be motivated to use such a common standard to implement the transferable core computer as described by Mancini.

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, Vazach, and Barros De Almeida to obtain the invention as specified in the instant claim.

As to claim 18, the combination of Ketler, Behrens, Mancini, and Vazach data transfer between the sensor and the calibration unit occurs with a proprietary protocol (NOTE: the protocol the proprietary Rem-Cal card uses; col. 6, lines 40-41).

The combination does not appear to explicitly disclose the standard interface at the computer unit is a USB-interface.

However, Barros De Almeida teaches the standard interface at the computer unit is a USB-interface (a host having a Universal Serial Bus (USB) port; col. 4, line 9).

Ketler, Behrens, Mancini, Vazach and Barros De Almeida are analogous art because they are from the same field of intrinsically safe data collection.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, Vazach and Barros De Almeida before him or her, to use a computer unit with an USB interface as taught by Barros De Almeida, because combination anticipates a serial network port (see

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Behrens; col. 3, line 38) and a person having ordinary skill in the art would be motivated to incorporate a USB interface because it has become an industry standard in serial interfaces.

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, Vazach and Barros De Almeida to obtain the invention as specified in the instant claim.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ketler, Behrens, Mancini, and Vazach as applied to claims 11 and 17 above, and further in view of Parker et al (US Patent # 5405512), hereinafter referred to as Parker.

As to claim 19, while Ketler that relevant parameters are recorded and analyzed by computer (col. 1, lines 35-40), the combination of Ketler, Behrens, Mancini, and Vazach does not appear to explicitly disclose the computer analyzes the parameters to make an assessment of the life span of an electrode in a sensor.

However, Parker discloses an assessment of the life span of an electrode in a sensor (sensing electrode, col. 2, lines 30-35; the sensing circuit 58 detects a drop in current from any of the anode electrodes relative to the others of the anodes as an indication of the end of the useful life of the sensor, col. 3, lines 25-30).

Ketler, Behrens, Mancini, Vazach and Parker are analogous art because they are from the same field of sensor data collection.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, Vazach and Parker before him

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or her, to analyze the relevant parameters to assess the life span of the sensing electrode as taught by Parker because the assessment would provide the user an indication that the sensor must be replaced.

The suggestion/motivation for doing so would have been to provide the system monitor an indication when the sensor must be replaced (Parker: col. 3, lines 35-40)

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, Vazach and Parker to obtain the invention as specified in the instant claim.

Response to Arguments

Applicant's arguments with respect to claims 7, 8, 10-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US PGPub # 2001/0028305 of Bennett, JR. et al. is pertinent to passive sensors with analog to digital converters.

US Patent # 6397322 of Voss et al. is pertinent to intrinsic safety barriers between intrinsically safe environment and a non-intrinsically safe area.

US Patent # 5733436 of Demisch et al. is pertinent to the determination of the total useful life of a sensor.

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Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC T. OBERLY whose telephone number is (571)272-6991. The examiner can normally be reached on Monday - Friday 7:30 - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Henry Tsai can be reached on (571) 272-4176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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